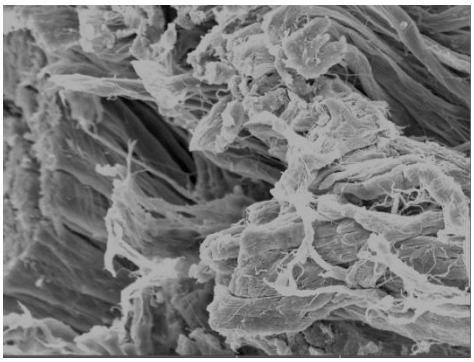

Figure 21. The SEM image of S-9

In the above figures, S-2 and S-3 showed integrated network structures, which was formed through the intense chemical reactions between the natural rubber latex and the shavings under stirring and hot-pressing. By contrast, the latex and the shavings were not well bonded in S-1 and S-9. The results are consistent with the analysis on tensile strength and gas permeability.

Considering the SEM results and the orthogonal test, the hot-pressing parameters of S-5 and S-6 were determined as the optimal settings for basic hot-pressing.

4. CONCLUSIONS

The above analysis shows that it is feasible to produce GFGL plates through hot-pressing on a flat vulcanizing machine. This dry machining method is simple and cost-effective, and can effectively recycle chrome shavings, without causing any secondary pollution to the environment.

The optimal hot-pressing conditions and formula for GFGL plates made of natural rubber latex were determined as follows: (1) latex ratio 15 %, water ratio 2:1, 110 ℃, 6min and 5MPa; (2) latex ratio 21 %, water ratio 2.5:1, 100 ℃, 4min and 5MPa.

Under these settings, the preliminary plates enjoy good gas permeability and water absorption, and enough tensile strength and rupture strength. If toughed by plant fibers, these plates can be adopted to produce insole board in footwear industry.

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